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A population count and ecological notes for the little-known terrestrial orchid *Didymoplexis pallens*

Donald C. Franklin[1] and Raelee Kerrigan[2]

[1] School for Environmental Research, Charles Darwin University, Darwin, NT 0909. Email: don.franklin@cdu.edu.au
[2] Northern Territory Herbarium, Department of Infrastructure, Planning and Environment, PO Box 496, Palmerston, NT 0831. Email: raelee.kerrigan@nt.gov.au

Didymoplexis pallens Griff. is a leafless, saprophytic, terrestrial orchid. Its small white flowers open one at a time in a raceme atop an unbranched, 10–15 cm, pink, fleshy stem. For most of the year it persists underground as a tuber, emerging to flower and fruit following early wet season rains (Jones 1988). The species is known from Queensland, Northern Territory, Western Australia, Indonesia, Malaysia and India, but is considered "elusive" (Hooker 1894, Jones 1988). In the Northern Territory (NT), Liddle *et al.* (1994) mapped its occurrence at two locations in the Daly River catchment and two in central Arnhem Land. It has since been located on Melville Island (NT Herbarium record). On the basis of the sparsity of records and limited and anecdotal information about its occurrence, the species has been classified for the NT as Data Deficient (DIPE 2002).

In this note, we provide details of a sixth NT location for *D. pallens* including a population count and brief ecological notes. The population was discovered by one of us (Franklin 2003) during the course of a study of the Top End Bamboo *Bambusa arnhemica* at Mary River Park (12°54'30" S, 131°39'30" E), a private ecotourism facility, in November 2001. At the time, an estimated 100 individuals were found growing under bamboo clumps on the bank of a billabong embedded in the floodplain of the Mary River approximately one kilometre upstream from the Arnhem Highway bridge over the Mary River.

On 2 December 2003, we conducted a search for the species over about 3 km of billabong bank at Mary River Park, including the area of the original discovery. We located *D. pallens* intermittently over a 1.2 km length of bank, and counted exactly 700 individuals, of which an estimated 90% were in flower and 10% in fruit.

Most *D. pallens* were found growing in bamboo leaf litter. Some were under other riparian trees, shrubs or vines – *Phyllanthus reticulatus*, *Ficus scobina*, *Lophostemon lactifluus* and *Gymnanthera oblonga*, and a few under a light cover of the grass *Paspalidium distans* that occurs in open areas immediately above the riparian forest. The soils supporting *D. pallens* were alluvial, grey clay-loams and, perhaps surprisingly for soils supporting a saprophyte, not notably humic. All sites are prone to inundation (Franklin, pers.

obs.), most often during the mid- to late-wet season after flowering and fruiting have finished. We did not locate any *D. pallens* in the lower slope of the riparian forest where inundation may be prolonged and occurs earlier in the season. *Didymoplexis pallens* tubers and presumably also seed are thus tolerant of waterlogging, but excess and/or early waterlogging may limit its occurrence, a strikingly similar ecological pattern to that of the bamboo under which it occurs at Mary River (Franklin & Bowman 2004).

Didymoplexis pallens is not exclusively associated with bamboo. Notes accompanying previous herbarium collections for the NT indicate occurrence in a variety of damp and/or poorly-drained situations, including a seepage area on the margin of monsoon rainforest in sandstone country, amongst sedges at the edge of a spring-fed monsoon rainforest, in leaf litter in vine forest along a river, and on a swampy plain treeless but for some *Pandanus*.

Reasons for the patchiness and scarcity of *D. pallens* in the NT, its response to fire, and the threats facing it, if any, are speculative. The Mary River site was subject to an intense wildfire in August 2001, and *D. pallens* was observed on burnt ground in the following November (Franklin 2003). The area was not burnt for at least several years prior to 2001, and has not been burnt since. Tuberous plants are particularly susceptible to disturbance by Feral Pigs *Sus scrofa* (e.g. Fensham 1993) and possibly also Asian Water Buffalo *Bubalus bubalis*. Herbarium notes associated with one of the Arnhem Land sites report heavy disturbance by buffalo. Under current management, there are no buffalo in the riparian forest areas of Mary River Park. An active control program for feral pigs has been successful in reducing them to low levels in the area where we found *D. pallens*, as evidenced by notably low levels of impact on bamboo shoots compared to other sites (Franklin, unpubl.).

Based on the available evidence of limited extent of occurrence and apparently small population, a case could be made for classifying *D. pallens* as Vulnerable in the NT. However, plants are evident above ground for just a few weeks each year (Franklin 2003) and at a time when the weather is particularly unfavourable for field surveys, so it may readily be overlooked in other areas. Annual fluctuations in the number of orchids that emerge seasonally from tubers (Gillman & Dodd 1998) may overstate real population fluctuations because of tuber dormancy (Brzosko 2003, Kery & Gregg 2004). We therefore recommend that *D. pallens* continue to be classified as Data Deficient in the NT, and that further survey and study of the population dynamics of, and threats to the species, be undertaken.

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